PHYSICAL
SCI. LIB.

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MAPS.

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

GEOLOGY OF SOUTHWESTERN SANTA BARBARA COUNTY CALIFORNIA

POINT ARGUELLO, LOMPOC, POINT CONCEPTION, LOS OLIVOS, AND GAVIOTA QUADRANGLES

BULLETIN 150
1950

DIVISION OF MINES
FERRY BUILDING, SAN FRANCISCO

DIVISION OF MINES
OLAF P JENKINS, CHIEF

STATE OF CALIFORNI
DEPARTMENT OF NATURAL RE

120° 45'
34° 45'
40'
(Point Sal)
35'
120° 30'

LEGEND

QUATERNARY

Recent

Qaf — Alluvium

Qls — Landslide

Qds — Dune sand

Pleistocene

Qt — Terrace

UNCONFORMITY

Qo — Orcutt
(wind-blown sand; locally indurated; basal pebble conglomerate)

UNCONFORMITY

Paso Robles
(shale-pebble conglomerate; green silt and clay; sand; fresh-water limestone beds; non-marine)

TERTIARY

Pliocene

Tca — Careaga
(upper portion (*Graciosa member*)—loose buff sand, locally pebbly, shell-reefs at or near base; marine)
(lower portion (*Cebada member*)—fine-grained buff sand; marine)

Tf — Foxen
(gray clay shale; thin glauconitic sands; marine)

Tsq — Sisquoc
(white-weathering massive impure diatomite; diatomaceous shale; pure laminated diatomite; marine)

LOCAL UNCONFORMITY

Miocene

Tm-u — Monterey—Upper
(hard, laminated platy siliceous shale; cherty shale; diatomite lenses; marine)

Tm-l — Monterey—Lower
(hard, laminated platy siliceous shale; soft, thin-bedded shale; phosphatic shale; limestone beds; marine)

Tt — Tranquillon
(rhyolite flows and agglomerate; tuff; bentonite; basalt)

UNCONFORMITY

Tr — Rincon
(gray clay shale and siltstone; marine)

Tv — Vaqueros
(gray to buff sandstone; green-brown conglomerate; fossiliferous; marine)

LOCAL UNCONFORMITY

Oligocene

Ts — Sespe
(variegated green and red clays, silts and sands; buff sandstone; conglomerate of Franciscan debris; non-marine)

Ta — Alegria
(buff to gray sandstone; green siltstone; marine phase of Sespe)

Tg

SYMBOLS

- Contact, between formations
- Contact, between members
- Sandstone bed
- Conglomerate bed
- Limestone bed
- 20 — Strike and dip
- Strike and vertical dip
- 70 — Strike and overturned dip
- Horizontal bed
- 20 — Dip only
- Axis of anticline, showing plunge
- Axis of syncline, showing plunge
- Fault { U—upthrown side / D—downthrown side
- Fault with lateral movement
- Fault approximate position

PACIFIC OCEAN

BURTON MESA
CAMP
COOKE
MILITARY RESERVATION
JESUS MARIA
SANTA YNEZ R.
LOMPOC
Canada Tortuga
Barodo
Surf
Weser Spur
Bear Creek
Honda Creek
Honda
Pt. Pedernales
Pt. Arguello
SANTA YNEZ MOUNTAINS
Tranquillon Mtn.
Artesia School
Maple Sch
Sanders School
UNION SUGAR CO. MONUMENT
UNION SUGAR CO. E. MONUMENT

120° 30'

25'

(Santa Maria)

20'

120° 15'

34° 45'

(Tepusquet Peak)

40'

35'

(Los Olivos)

Los Alamos

Valley

Lompoc

Santa Rita Valley

Mission La Purisima

Cebada Canyon

Purisima Canyon

Miguelito Park

Miguelito Hills

La Hoya Creek

Santa Rosa Hills

Santa Rosa Park

Diatomaceous Earth Quarries

Southern Pacific

Qal

Qo

Qt

Tca

Tca-u

Tca-l

Tsq

Tm-u

Tm-l

Tg sar

Tcd

Ke

Kj

Qls

Topography by Engineers, U. S. Army, 1942.

GEOLOGIC MAP OF THE LOMPOC, POINT CONCEPTI
CALIFORNI

By T. W. Dibblee, J

Scale 1/62500

Contour interval 20 fee

Datum is mean sea level

UNIVERSITY OF CALIFORNIA
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COLLEGE OF AGRICULTURE
DAVIS

Geology by T. W. Dibblee, Jr., 1930-39.

NCEPTION AND POINT ARGUELLO QUADRANGLES
LIFORNIA

. W. Dibblee, Jr.

Scale 1/62500

2 3 4 Miles

2 3 4 5 Kilometers

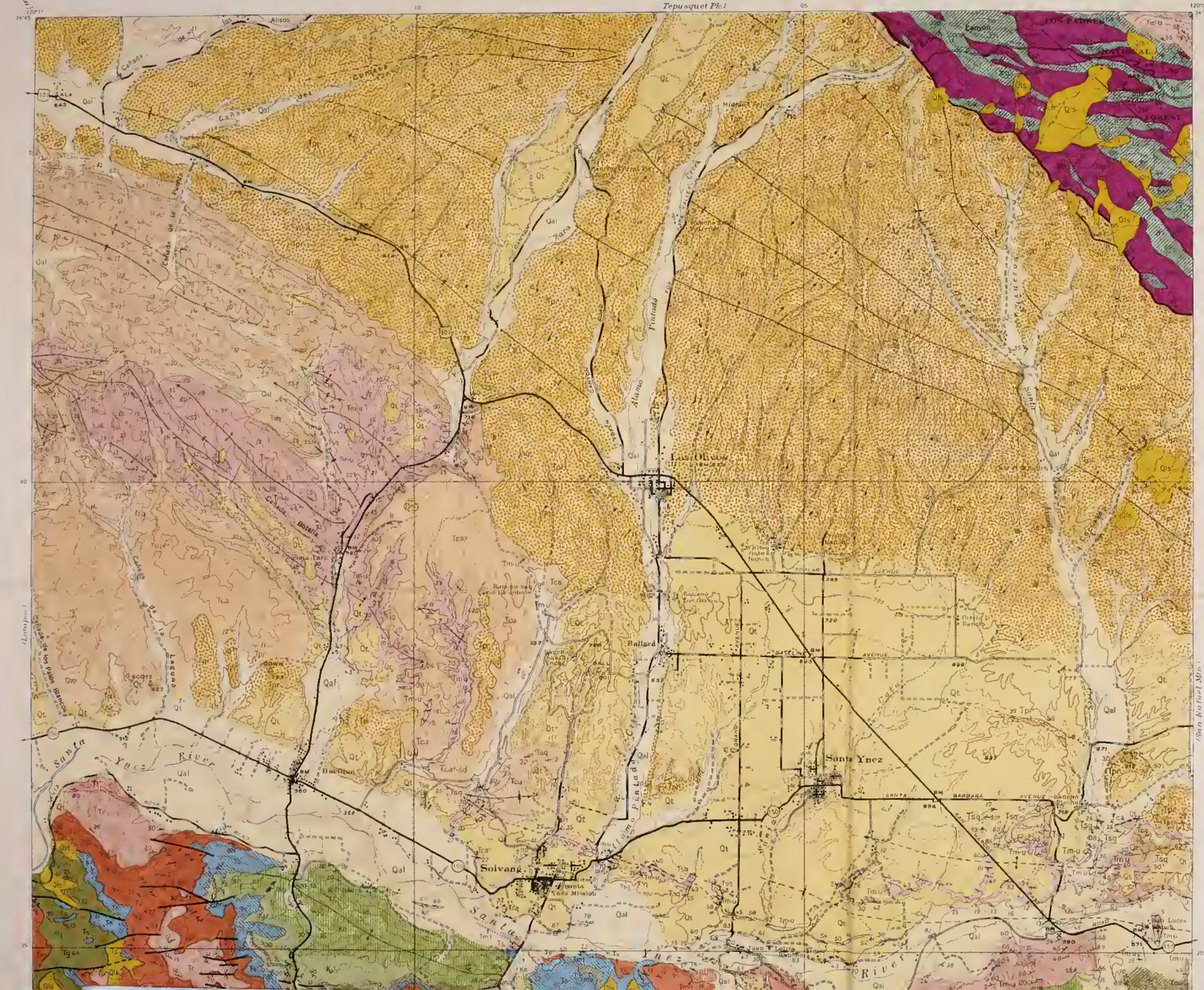
ur interval 20 feet

n is mean sea level.

DIVISION OF MINES
OLAF P JENKINS, CHIEF

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RESOURCES

BULLETIN 150, PLATE 2



LEGEND

QUATERNARY

Recent

- Qal — Alluvium
- Qls — Landslide
- Qds — Dune sand
- Qt — Terrace

UNCONFORMITY

Pleistocene

- Qo — Orcutt
  (wind-blown sand, locally indurated; basal pebble conglomerate)

UNCONFORMITY

- Tp — Paso Robles
  (shale-pebble conglomerate, green silt and clay, sand, fresh-water limestone beds, non-marine)

Pliocene

- Tca — Careaga
  Upper portion (Graciosa member)—loose buff sand, locally pebbly, shell-reefs at or near base; marine)
  Lower portion (Cebada member)—fine-grained buff sand; marine)
- Tf — Foxen
  (gray clay shale, thin glauconitic sands; marine)
- Tsq — Sisquoc
  (white-weathering massive impure diatomite, diatomaceous shale, pure laminated diatomite; marine)

LOCAL UNCONFORMITY

Miocene

- Tm-u — Monterey—Upper
  (hard, laminated platy siliceous shale, cherty shale, diatomite [illegible])
- Tm-l — Monterey—Lower
  (hard, laminated platy siliceous shale, soft, thin-bedded shale, phosphatic shale, limestone beds; marine)
- Tt — Trauquillon
  (rhyolite flows and agglomerate, tuff, bentonite, basalt)

UNCONFORMITY

Oligocene

- T — Rincon
  (gray clay shale and siltstone; marine)
- Tv — Vaqueros
  (gray to buff sandstone; green-brown conglomerate; fossiliferous, marine)

LOCAL UNCONFORMITY

- Ts — Sespe
  (variegated green and red clays, silts and sands, buff sandstone, conglomerate of Franciscan debris; non-marine)
- Ta — Alegria
  (buff to gray sandstone, green siltstone, marine phase of Sespe)
- Tg — [illegible]

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- Fault approximate position

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DAVIS

Corps of Engineers, U. S. Army, 1943

GEOLOGIC MAP OF THE LOS OLIVOS AND GAVIOTA QUADRANGLES CALIFORNIA

By T. W. Dibblee, Jr.

Geology by T. W. Dibblee, Jr., 1930-39.

Scale 1/62500

1 0 1 2 3 4 5 Miles

1 0 1 2 3 4 5 Kilometers

Contour interval 20 feet.

Datum is mean sea level.

Oligocene

Ts
Sespe
(variegated green and red clays, silts and sands; buff sandstone; conglomerate of Franciscan debris; non-marine)

Ta
Alegria
(buff to gray sandstone; green siltstone, marine phase of Sespe)

Tg
Gaviota
(upper member (Tg-u)—siltstone and minor buff sandstone
middle member (Tg-m)—hard concretionary buff sandstone
lower member (Tg-l)—massive siltstone; marine)

Tsa
Sacate
(hard buff sandstone and interbedded silty shale; marine)

Tg-sa
Gaviota-Sacate—undifferentiated

Eocene

Tcd
Cozy Dell
(thin-bedded clay shale; minor thin sandstones; marine)

Tma
Matilija
(thick-bedded arkosic buff sandstone; marine)

Tan
Anita
(gray clay shale; contains "Poppin shale" 0-50' red and green foraminiferal claystone; marine)

Sierra Blanca
(lenticular bed of hard algal limestone)

UNCONFORMITY

Cretaceous

Kj
Jalama
(gray clay shale; siltstone; hard buff sandstone; marine)

Ke
Espada
(dark green-brown thin-bedded carbonaceous shales and thin arkosic sandstones; marine)

Jurassic

Jh
Honda
(dark green-brown claystone, highly sheared)

Franciscan
(dark green hard arkosic sandstone (ss); sheared black shale (sh) radiolarian chert (ch); basalt (bal))

INTRUSIVE IGNEOUS ROCKS

Serpentine
(intrusive into Jf, Jh and basal Ke)

Andesite
(intrusive into Ke in West Fork Salsipuedes Creek)

TERT. (?)

DIVISION OF MINES
OLAF P JENKINS, CHIEF

STATE OF CALIFORNIA
DEPARTMENT OF NATURAL RES

LEGEND

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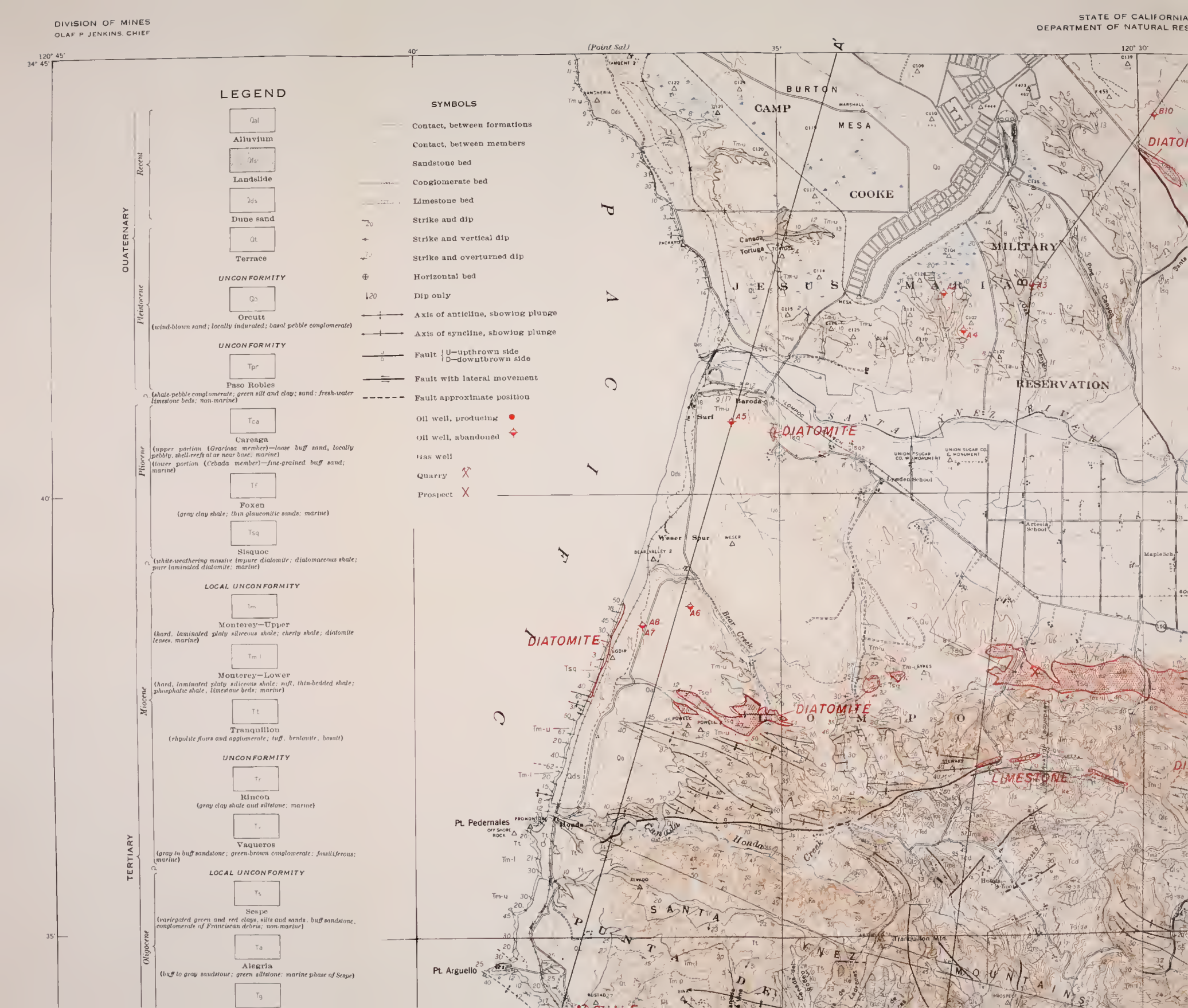
- Axis of syncline, showing plunge
- Fault (U—upthrown side, D—downthrown side)
- Fault with lateral movement
- Fault approximate position
- Oil well, producing
- Oil well, abandoned
- Gas well
- Quarry
- Prospect



B" C" D' (Santa Maria) E"

120° 15' (Tepusquet Peak) 34° 45'

DIATOMITE

LOMPOC OIL FIELD

TAR SAND

BURNT SHALE

TAR SAND

DIATOMITE

DIATOMITE

DIATOMITE

SHALE

DIATOMITE

DIATOMITE

BENTONITE

SHALE B

Los Alamos

Los Alamos Valley

Lompoc

Santa Rita Valley

Mission La Purisima

Four Corners

Maple Sch.

SOUTHERN PACIFIC

SANTA YNEZ RIVER

SANTA ROSA ROAD

SANTA ROSA PARK

MIGUELITO PARK

Miguelito Canyon

Purisima Canyon

Cebada Canyon

Cañada de la Vina

Santa Ynez (Thus Marked)

Los Alamos Valley

Cañada de los Calveras

Cañada de Los Palos Blancos

Orum Canyon

Crawford Canyon

Cañada de Lompoc

Lompoc Hills

Lu Hoya Creek

Santa Lucia Canyon

Santa Lucia

Santa Ynez

Cañada de Santa Rosa

Cañada de Laguna Seca

Laguna Seca

Cañada de Los Alamos

Cañada de Los Calveras

Cañada de Los Palos Blancos

Cañada de Santa Rosa

Cañada de Santa Ynez

Cañada de Lompoc

Cañada de Santa Rosa

Cañada de Santa Ynez

Cañada de Los Palos Blancos

Cañada de Los Calveras

Cañada de Los Alamos

Cañada de Laguna Seca

Topography by Engineers, U. S. Army, 1942.

ECONOMIC MAP OF THE LOMPOC, POINT CONCEPTION CALIFORNIA

UNIVERSITY OF CALIFORNIA
LIBRARY
COLLEGE OF AGRICULTURE
DAVIS

By T. W. Dibblee, Jr.

Scale 1/62500

Contour interval 20 feet
Datum is mean sea level

DIATOMITE

SHALE & LIMESTONE

DIATOMITE

LIMESTONE

DIATOMITE

DIATOMITE

SAND & GRAVEL

FLAGSTONE

TAR SAND

S A N T A Y N E Z M O U N T A I N S

S A N T A B A R B A R A C H A N N E L

Pt Conception

Government Pt

Geology by T. W. Dibblee, Jr., 1930-39.

ONCEPTION AND POINT ARGUELLO QUADRANGLES
ALIFORNIA

y T. W. Dibblee, Jr.

Scale 1/62500

1 2 3 4 Miles

2 3 4 5 Kilometers

ontour interval 50 feet

Datum is mean sea level

ZACA OIL FIELD
MAGNESITE
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TAR SAND
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DIATOMITE
DIATOMITE
GRAVEL
LIMESTONE SANDSTONE
Los Olives
Santa Ynez
Solvang
Buellton
Ballard
Los Padres National Forest
Santa Ynez River
Tepusquet Pk.
Mt. Pherson Pk.
Sisquoc Ranch
Rancho Tajiguas
Rancho Canada del Corral Quemado
Rancho Rancho Dos Pueblos
Rancho Rancho La Zaca
Rancho Rancho Alamo Pintado
Rancho Rancho Rancho Tepusquet
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Rancho

LIMESTONE SANDSTONE
LIMESTONE (algal)
SHALE
BENTONITE
TAR SAND
ORELLA GAS FIELD
CAPITAN OIL FIELD
SANTA YNEZ MOUNTAINS
LOS PADRES NATIONAL FOREST
SANTA BARBARA CHANNEL
Refugio Pass
Gaviota Pass
Gaviota Gorge
Gaviota Beach
El Capitan Beach
Refugio Beach
Las Cruces
Tajiguas
Orella
Juan Lolita
Rancho
Gaviota
Refugio Guard Station
Berry
Ridge
Mark
Black
Rancho
Southern
Pacific
Gaviota Flagpole
Gaviota Beach
Tajiguas Ranch
Refugio Ranch
Capitan
Capitan Lodge
Gaviota Creek
Refugio Creek
Arroyo Hondo
Arroyo Quemado
Arroyo Del Valle
Arroyo Del Tajiguas
Arroyo Del Refugio
Arroyo Del Capitan
Arroyo Del Capitan
Arroyo Del Capitan

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DAVIS

GEOLOGIC STRUCTURE SECTIONS ACROSS SOUTHWESTERN SANTA BARBARA COUNTY CALIFORNIA

by

T.W. DIBBLEE JR.

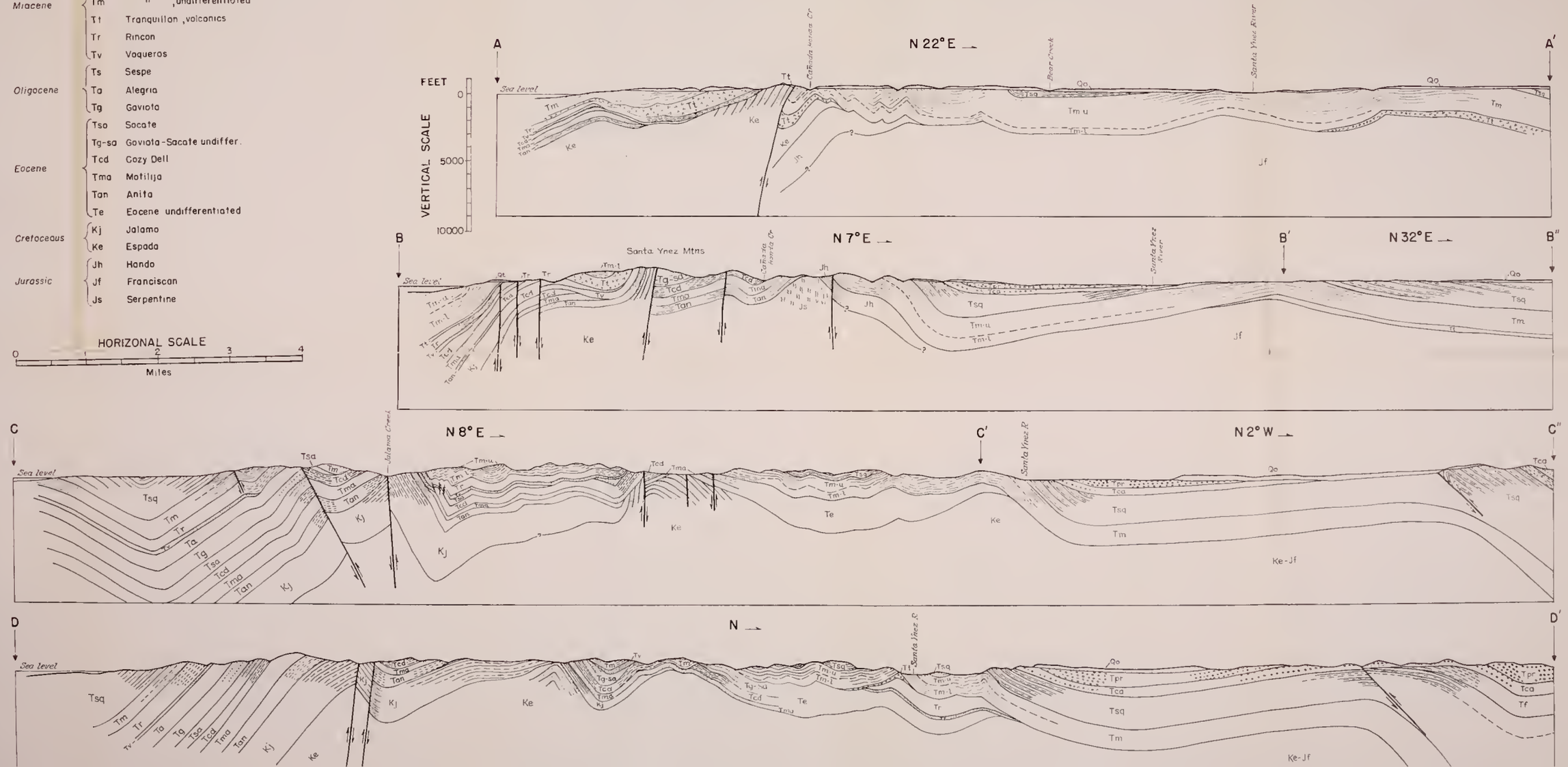
LEGEND

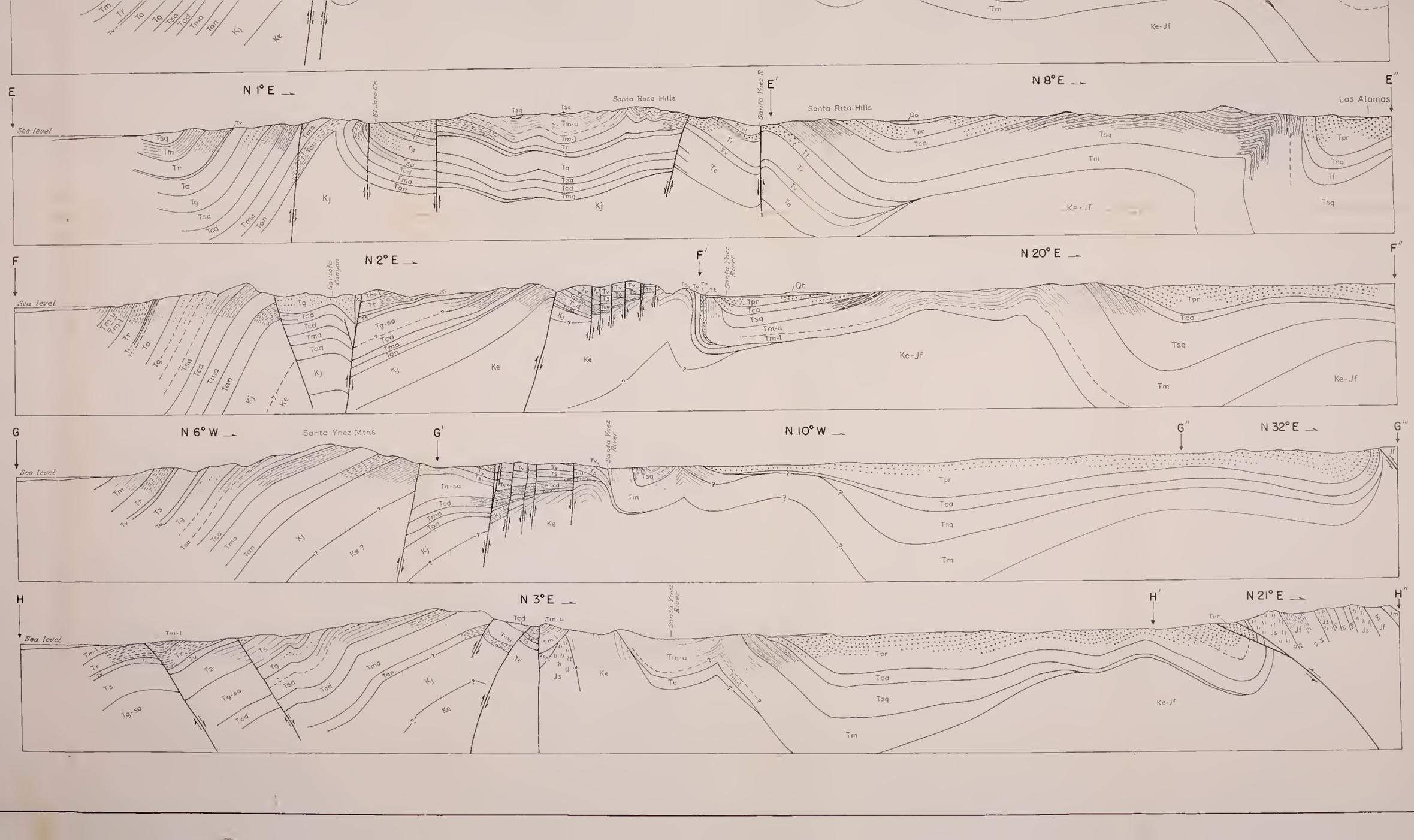
QUATERNARY	Qt	Terrace
	Qo	Orcutt
Pliocene	Tpr	Paso Robles
	Tca	Careaga
	Tf	Foxen
	Tsq	Sisquoc
Miocene	Tm-u	Monterey, upper
	Tm-l	" , lower
	Tm	" , undifferentiated
	Tt	Tranquillon, volcanics
	Tr	Rincon
	Tv	Vaqueros
Oligocene	Ts	Sespe
	Ta	Alegria
	Tg	Gaviota
Eocene	Tso	Socate
	Tg-sa	Gaviota-Sacate undiffer.
	Tcd	Cozy Dell
	Tma	Matilija
	Tan	Anita
	Te	Eocene undifferentiated
Cretaceous	Kj	Jalama
	Ke	Espada
Jurassic	Jh	Hando
	Jf	Franciscan
	Js	Serpentine

HORIZONAL SCALE

0 1 2 3 4

Miles




E
N 1° E
E'
N 8° E
E"
Sea level
El Jaro Cr.
Santa Rosa Hills
Santa Ynez R.
Santa Rita Hills
Las Alamos
Tsq
Tm
Tr
Ta
Tg
Tsa
Tca
Tma
Tan
Kj
Ke
Tv
Tm-u
Tm-l
Te
Qo
Tpr
Tf
Ke-Jf
F
N 2° E
F'
N 20° E
F"
Gaviota Canyon
Santa Ynez River
Qt
Ts
Tg-sa
Tcd
G
N 6° W
Santa Ynez Mtns
G'
N 10° W
G"
N 32° E
G"'
Jf
H
N 3° E
H'
N 21° E
H"
Js
Jm
Tur
Tm-l
Fault

EXPLANATION

		FORMATION	ORIGIN	AGE
	Qal	Alluvium	continental,	Recent & upper Pleistocene
	Qt	Orcutt sand, terraces	"	Middle Pleistocene
	QP	Paso Robles formation	"	Lower " & upper Phocene
	Pu	Careaga sand	marine	Upper Pliocene
	Pml	Foxen claystone	"	Middle "
	Mu	Sisquoc formation	"	Lower " & upper Miocene
	Mm	Monterey shale–upper	"	Upper Miocene
		" " lower		Middle "
	Mv	Tranquillon volcanics	"	Lower "
	Ml	Rincon claystone	"	" "
		Vaqueros formation	"	" "
	Φc	Sespe formation	continental	Upper Oligocene & lower Miocene
	Φ	Alegria formation	marine	Upper Oligocene
	Eu	Gaviota formation	"	Lower Oligocene
		Sacate "	"	Upper Eocene
		Cozy Dell shale	"	" "
		Matilija sandstone	"	" "
		Anita shale	"	Middle Eocene
		Sierra Blanca limestone	"	" "
	Kc	Jalama formation	"	Upper Cretaceous
	JK	Espada formation	"	Lower Cretaceous & Upper Jurassic
	Jf	Monda shale	"	Upper Jurassic
		Franciscan formation	"	" "
	Jub	Serpentine	intrusive	Upper Jurassic

AREAL MAP SHOWING GENERALIZED GEOLOGY OF SOUTHWESTERN SANTA BARBARA COUNTY, CALIFORNIA

0 5 10 Miles
SCALE

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Geology by T W Dibblee

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TECTONIC MAP
OF
SOUTHWESTERN SANTA BARBARA COUNTY
CALIFORNIA

SYMBOLS

- Axis of anticline } end arrows indicate plunge
- Axis of syncline } end arrows indicate plunge
- Fault { U = upthrown; D = downthrown; parallel arrows indicate relative lateral movement; arrow with number indicates dip of fault plane
- Normal fault (hachures on downthrown block)
- Reverse or thrust fault (saw-teeth on upthrown block)

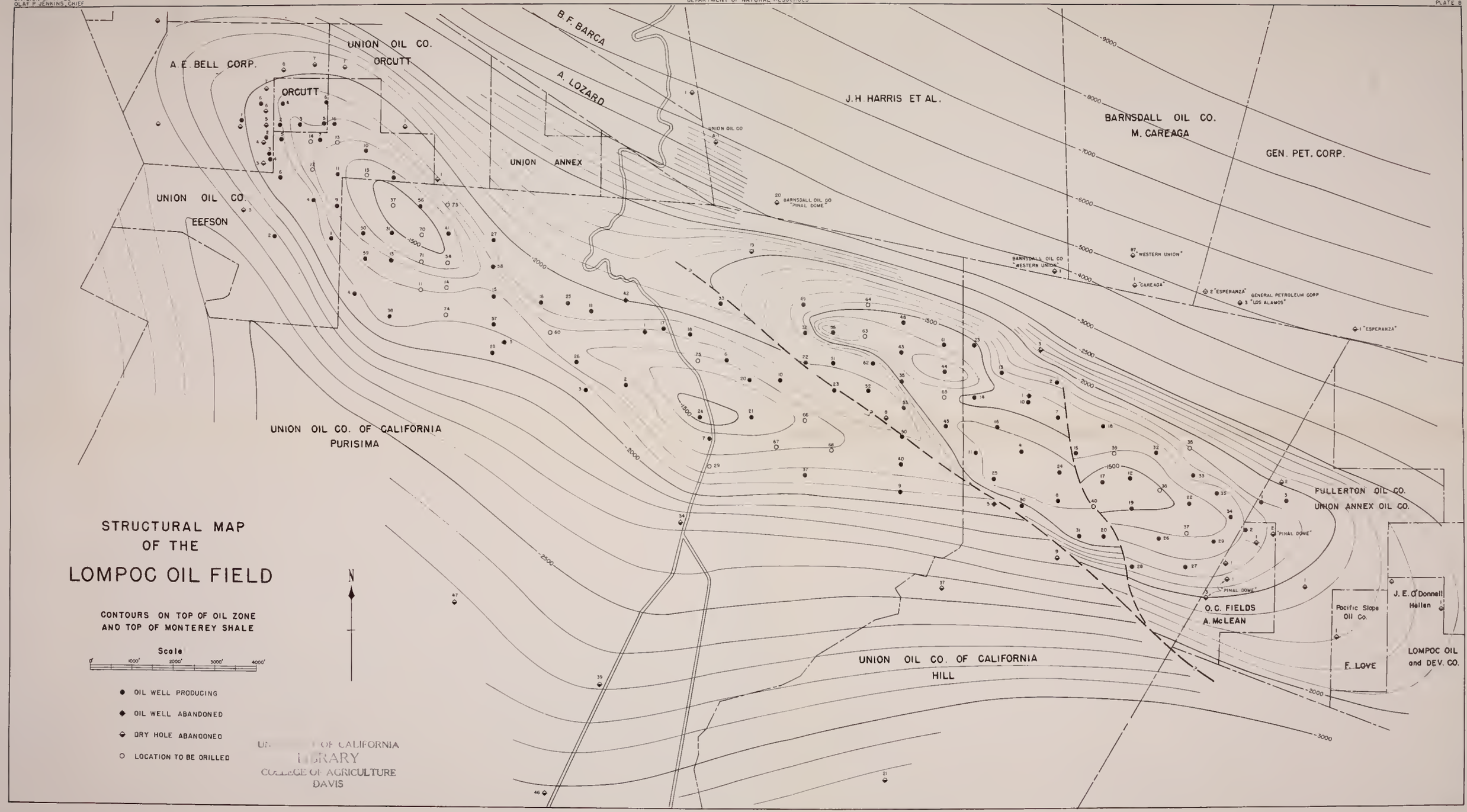
SCALE 0 1 2 3 4 MILES

PHYSIOGRAPHIC MAP
OF
SOUTHWESTERN SANTA BARBARA COUNTY
CALIFORNIA
showing
Physiographic features & drainage

Heavy dashed lines indicate boundaries of physiographic units

SCALE 0 1 2 3 4 MILES

120°30' 120°15' 34°30'



STRUCTURAL MAP OF THE LOMPOC OIL FIELD

CONTOURS ON TOP OF OIL ZONE AND TOP OF MONTEREY SHALE

Scale

0 1000' 2000' 3000' 4000'

N

- OIL WELL PRODUCING
- OIL WELL ABANDONED
- DRY HOLE ABANDONED
- LOCATION TO BE DRILLED

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A. Looking east along the Santa Ynez River, east of Lompoc. Santa Rita Hills on the left; Santa Rosa Hills on the right; Santa Ynez Valley in distance; Santa Ynez Peak at upper right. Photo by courtesy of *Spence Air Photos.*

B. Looking north toward Capitan oil field at foot of Santa Ynez Mountains, northeast corner Gaviota quadrangle. Photo by courtesy of *Spence Air Photos.*

B. Aerial photograph of south flank of western Santa Ynez Range west of Gaviota, showing exposed Tertiary section. Photo by courtesy of *Fairchild Aerial Surveys, Inc.*

C. View northeast showing celite deposit of Johns-Manville Corporation near Lompoc, California. Stratification in the diatomite of the lower Sisquoc formation may be seen in the hills on both sides of the quarries. Santa Rita Hills are beyond the Santa Ynez River, near top of picture. Photo by courtesy of *Spence Air Photos*

E. Looking approximately north toward Santa Ynez Mountains. Capitan oil field in left center of picture. Photo by courtesy of *Spence Air Photos.*

F. View southwest over Santa Ynez Range toward Gaviota. Gaviota Canyon at upper right. Photo by courtesy of *Spence Air Photos.*